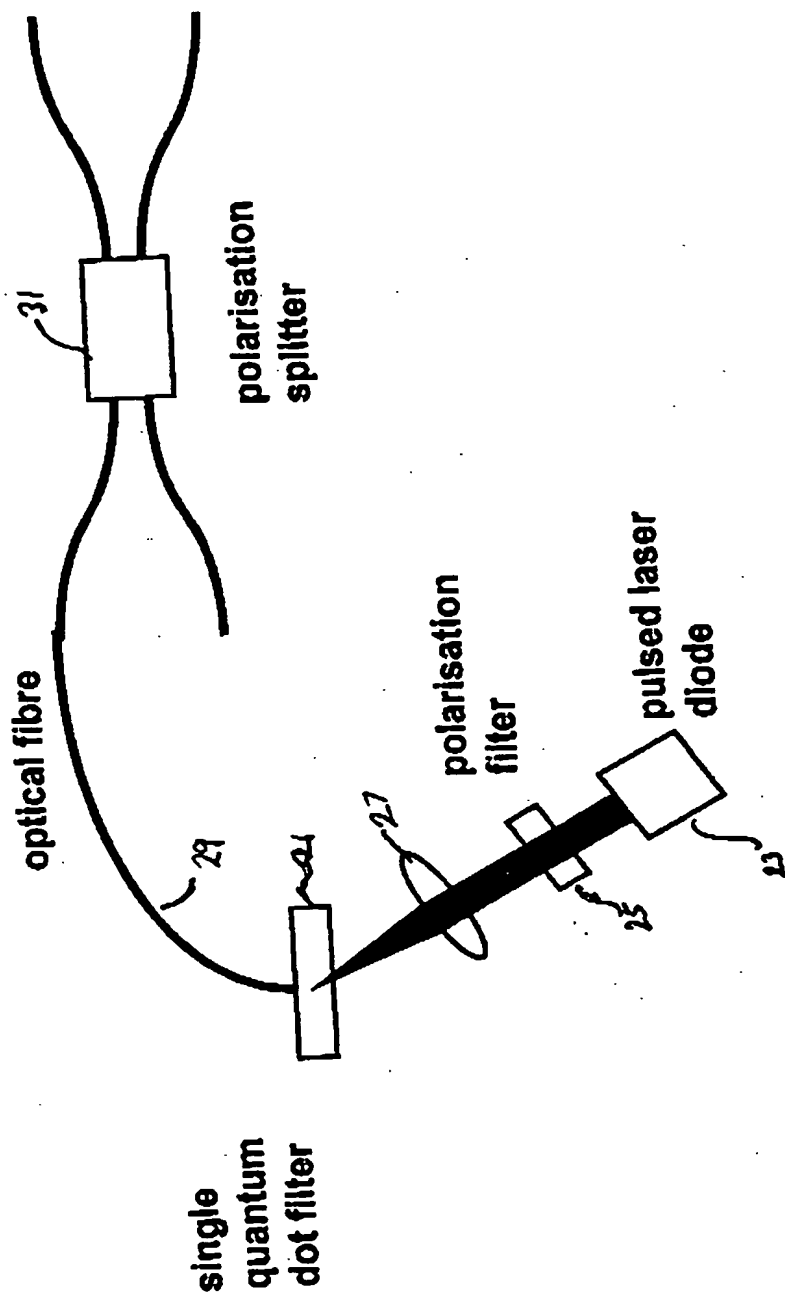


FIGURE 1.



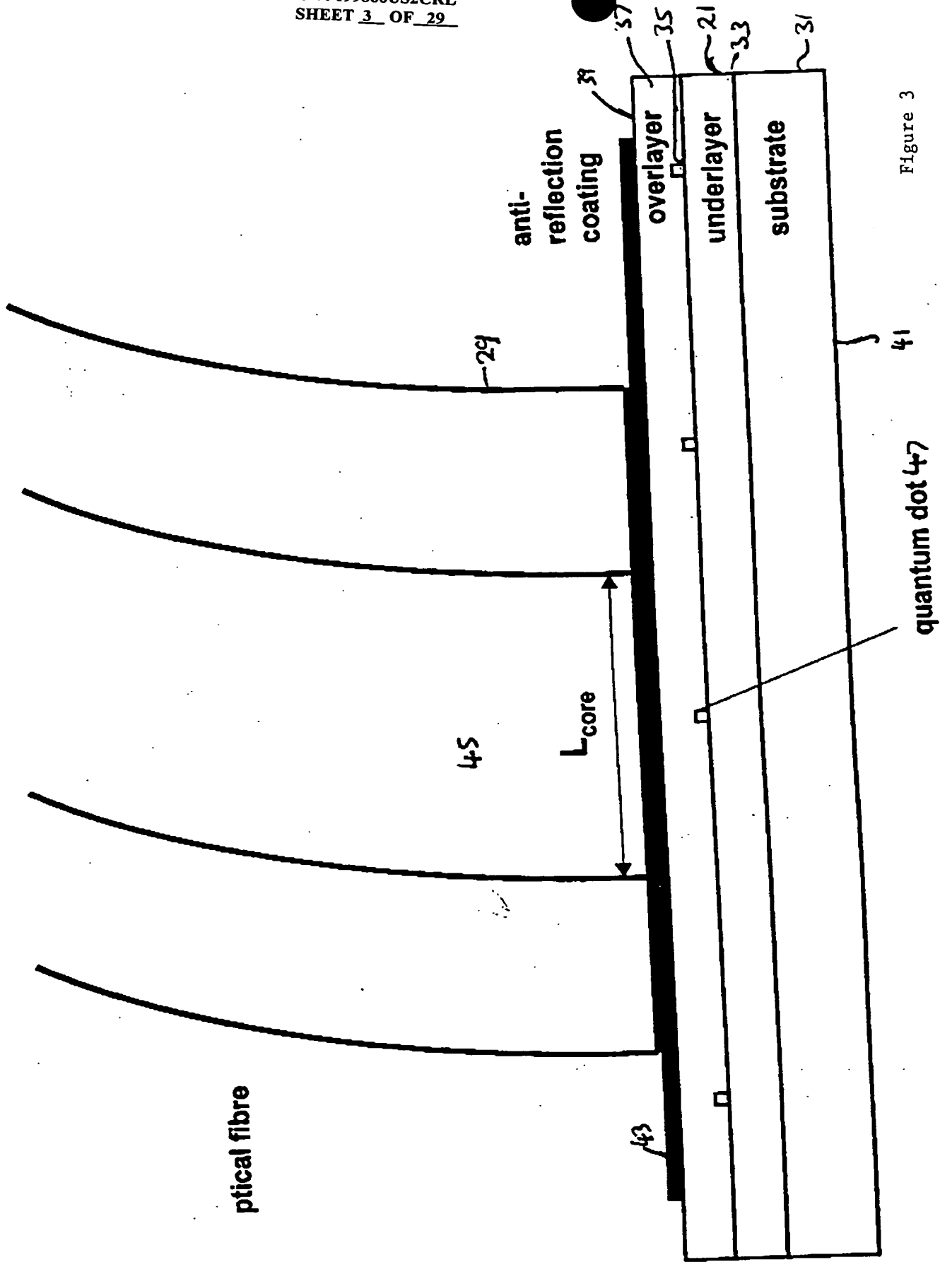


Figure 3

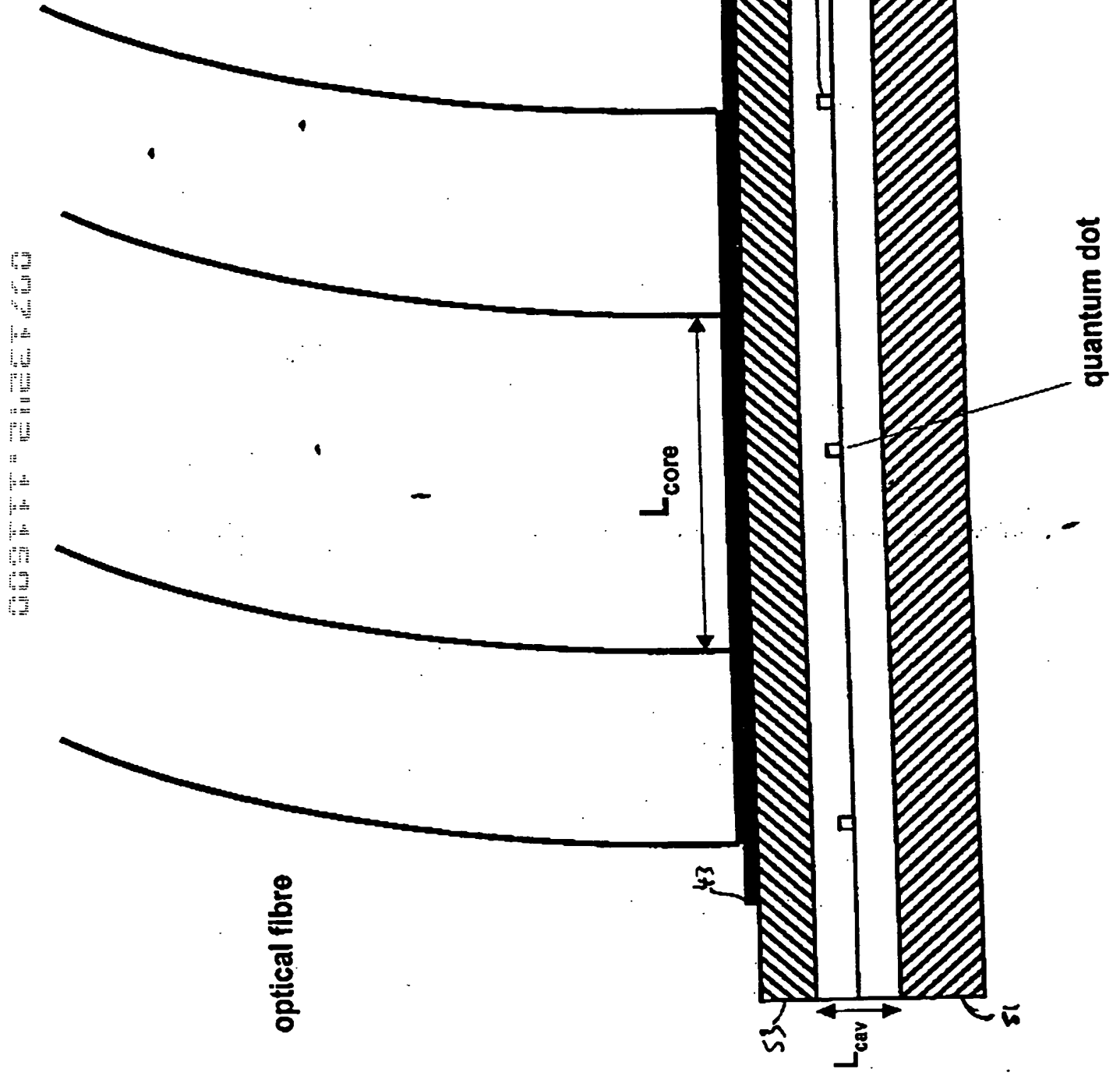


Fig 4

collection
optic

anti-
reflection
coating

L_{aperture}

opaque film

43

57

39

overlay r

37

35

33

underlayer

substrate

quantum dot 47

55

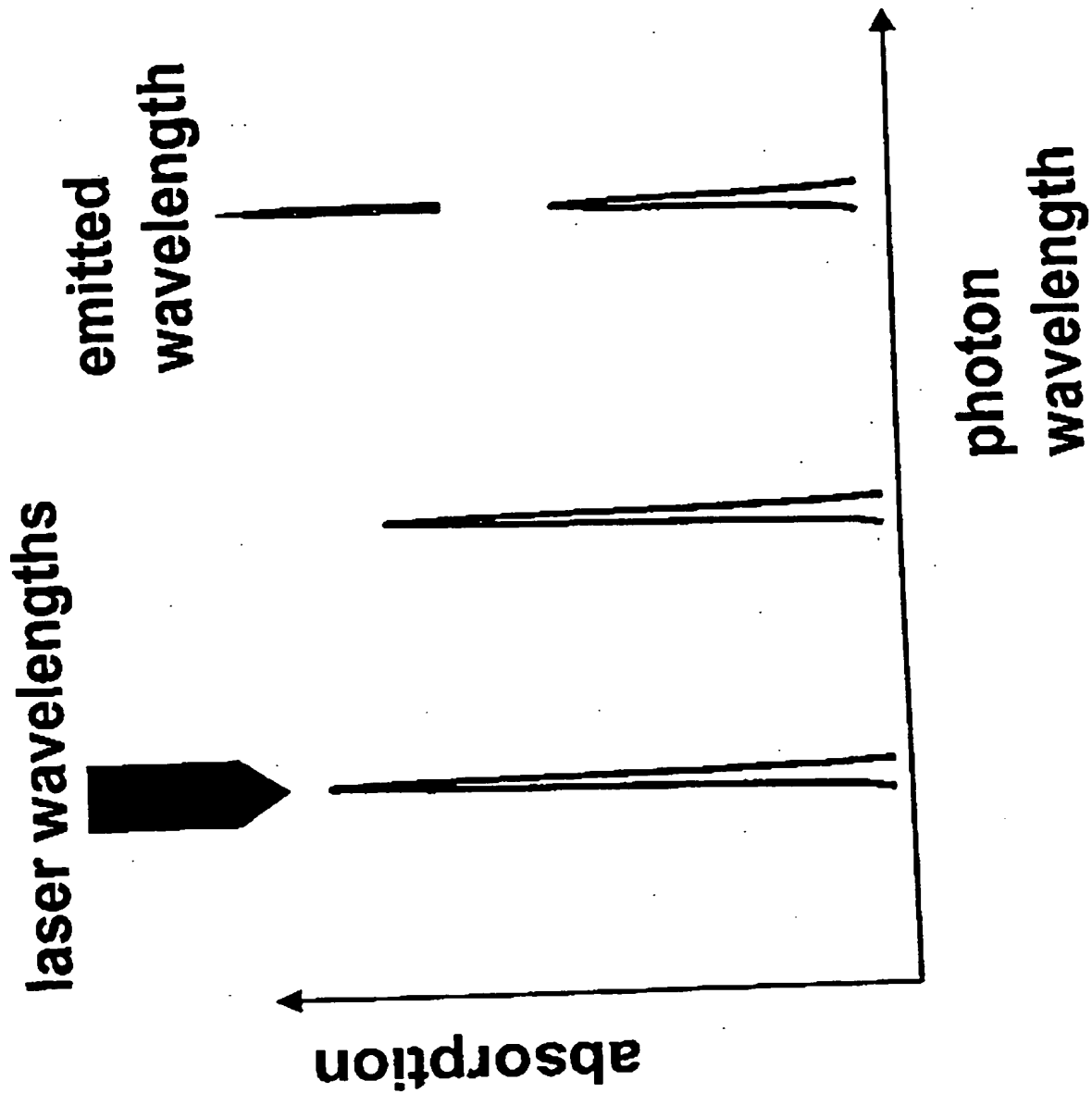
Fig. 5

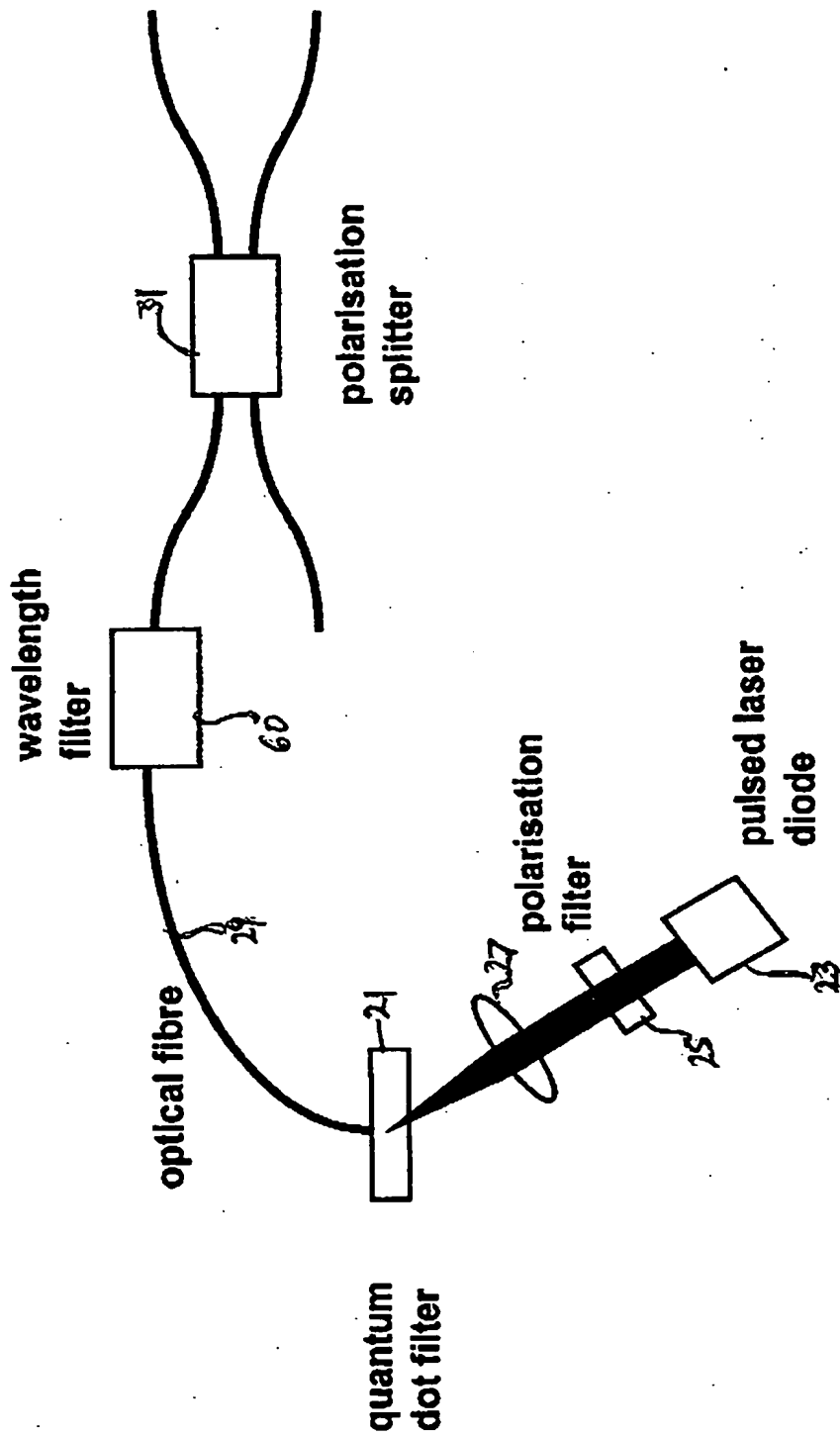
FIG. 5 is a cross-sectional view of a device structure 100. The device structure 100 includes a substrate 10, an underlayer 20, an overlay 30, and an anti-reflection coating 40. A collection optic 50 is positioned above the device structure 100. An opaque film 57 is located on the top surface of the overlay 30. A quantum dot 47 is embedded in the underlayer 20. The distance between the opaque film 57 and the quantum dot 47 is denoted as L_{aperture} . The device structure 100 is shown in a cross-sectional view, with the substrate 10 at the bottom, followed by the underlayer 20, the overlay 30, and the anti-reflection coating 40. The collection optic 50 is positioned above the device structure 100. The opaque film 57 is located on the top surface of the overlay 30. The quantum dot 47 is embedded in the underlayer 20. The distance between the opaque film 57 and the quantum dot 47 is denoted as L_{aperture} .

6/24

OBLON, SPIVAK, ET AL
DOCKET #: Andrew James SHIELDS, et
INV: 199866US2CRL
SHEET 6 OF 29

Fig. 6





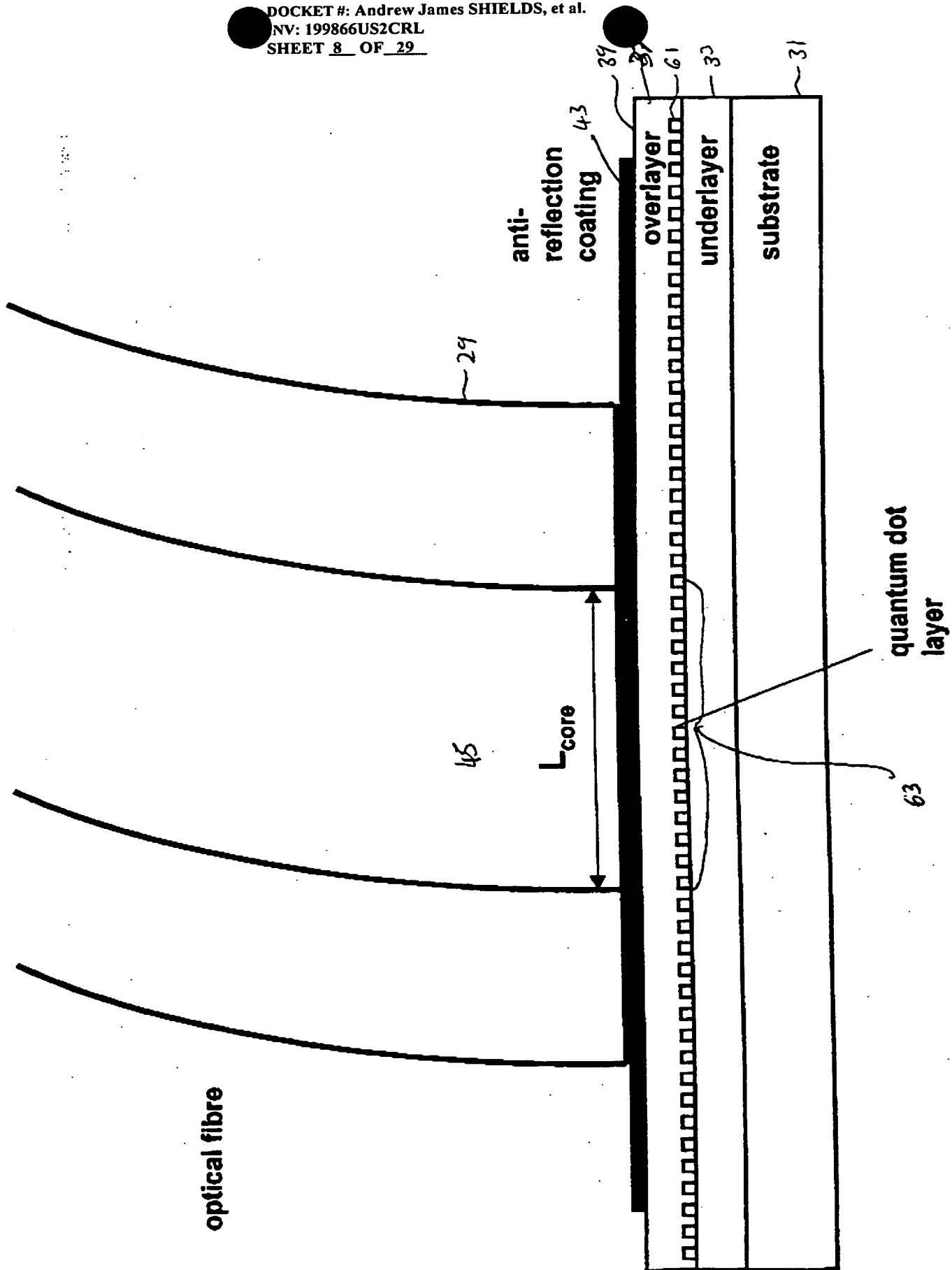


Fig 8

9/29

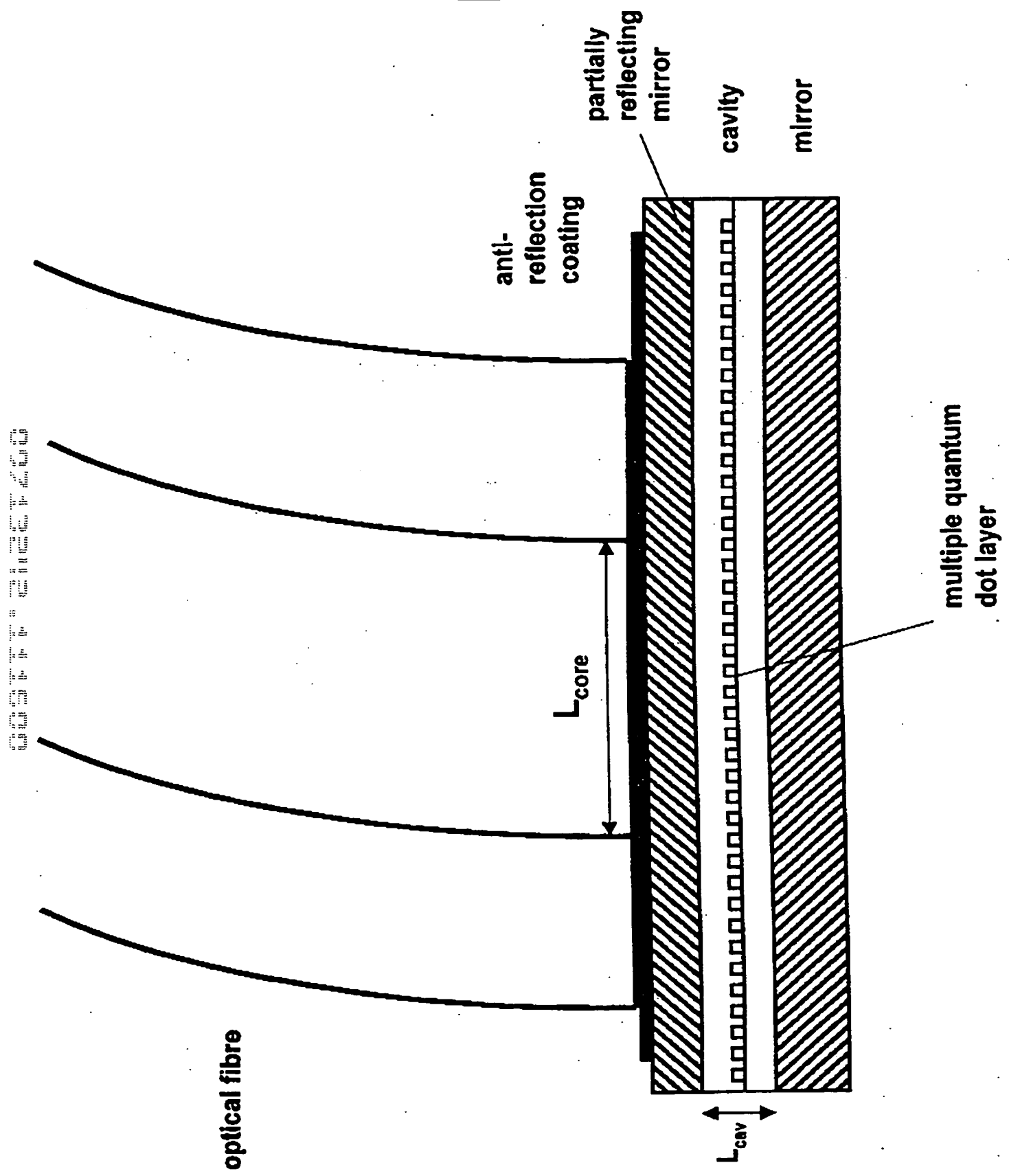
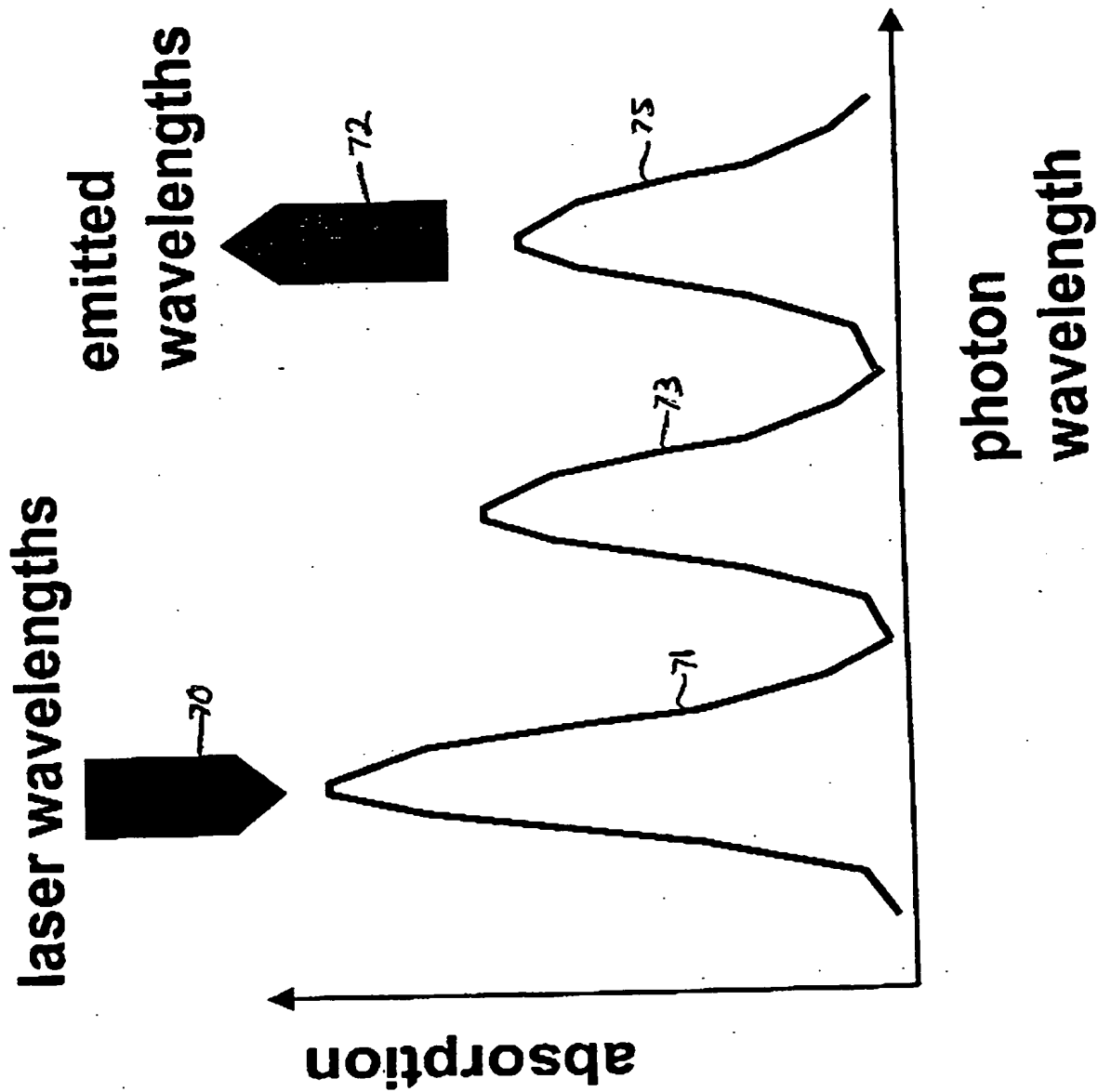


Fig 9



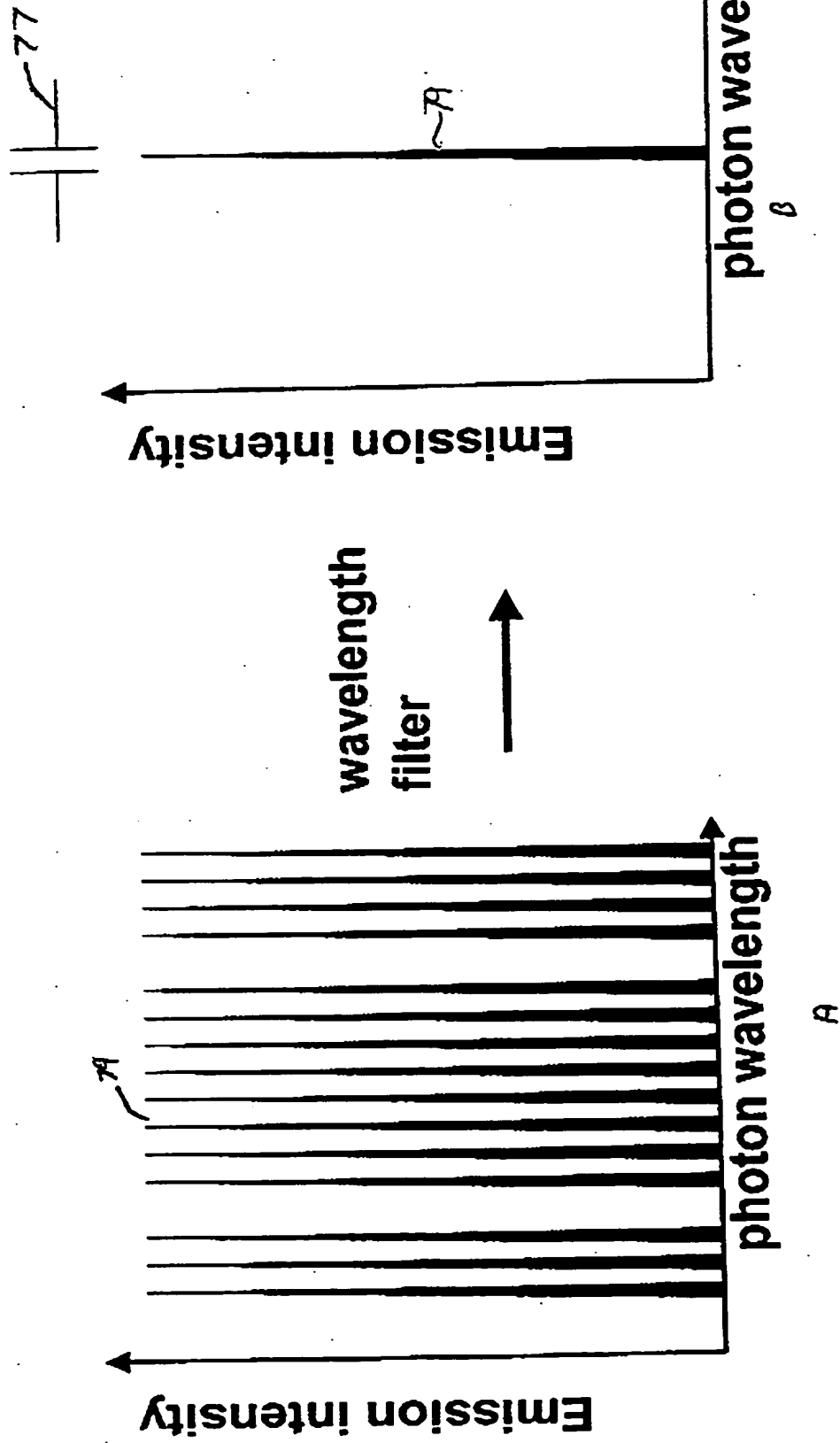
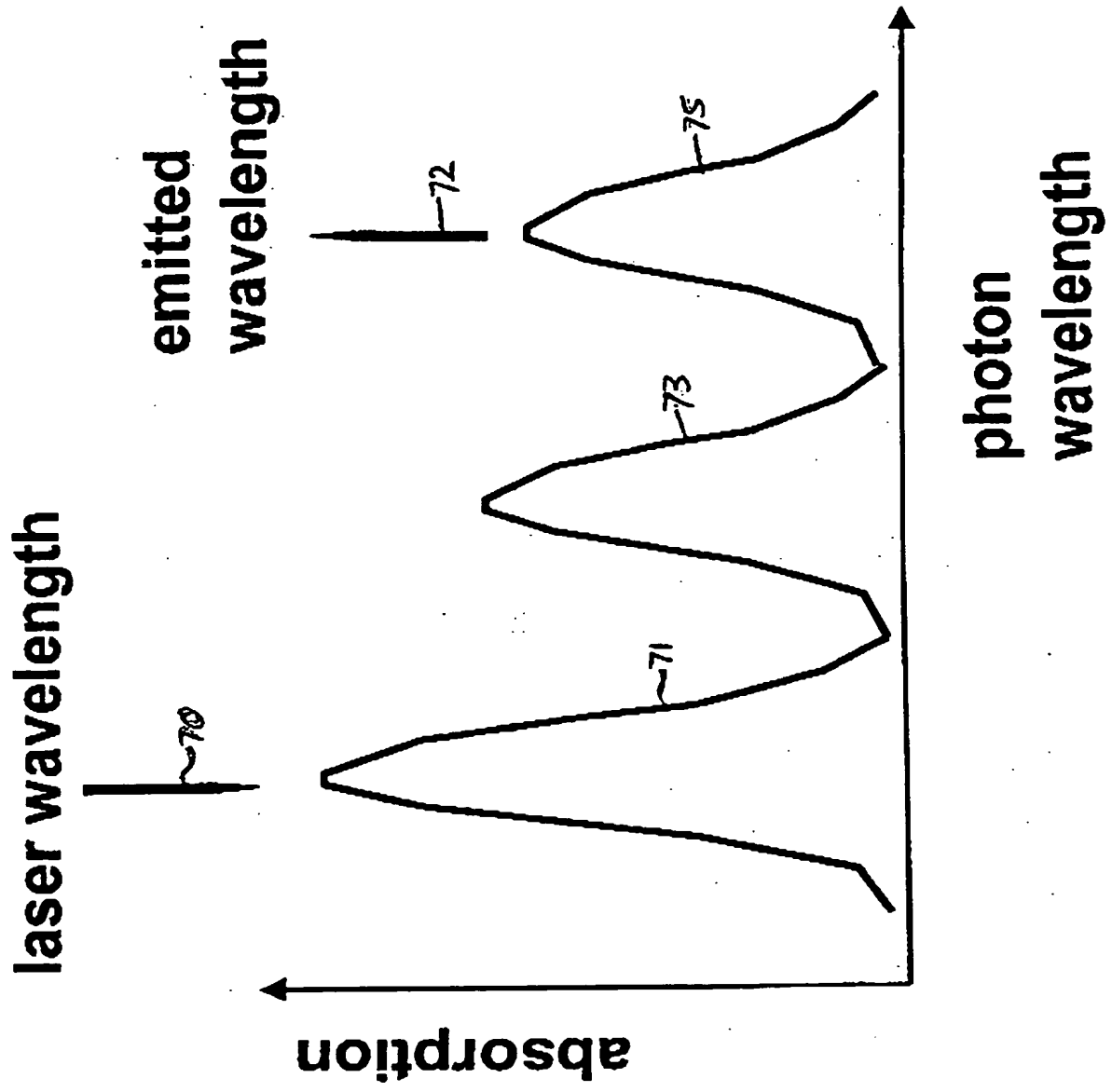


Fig.11

12/29



13129

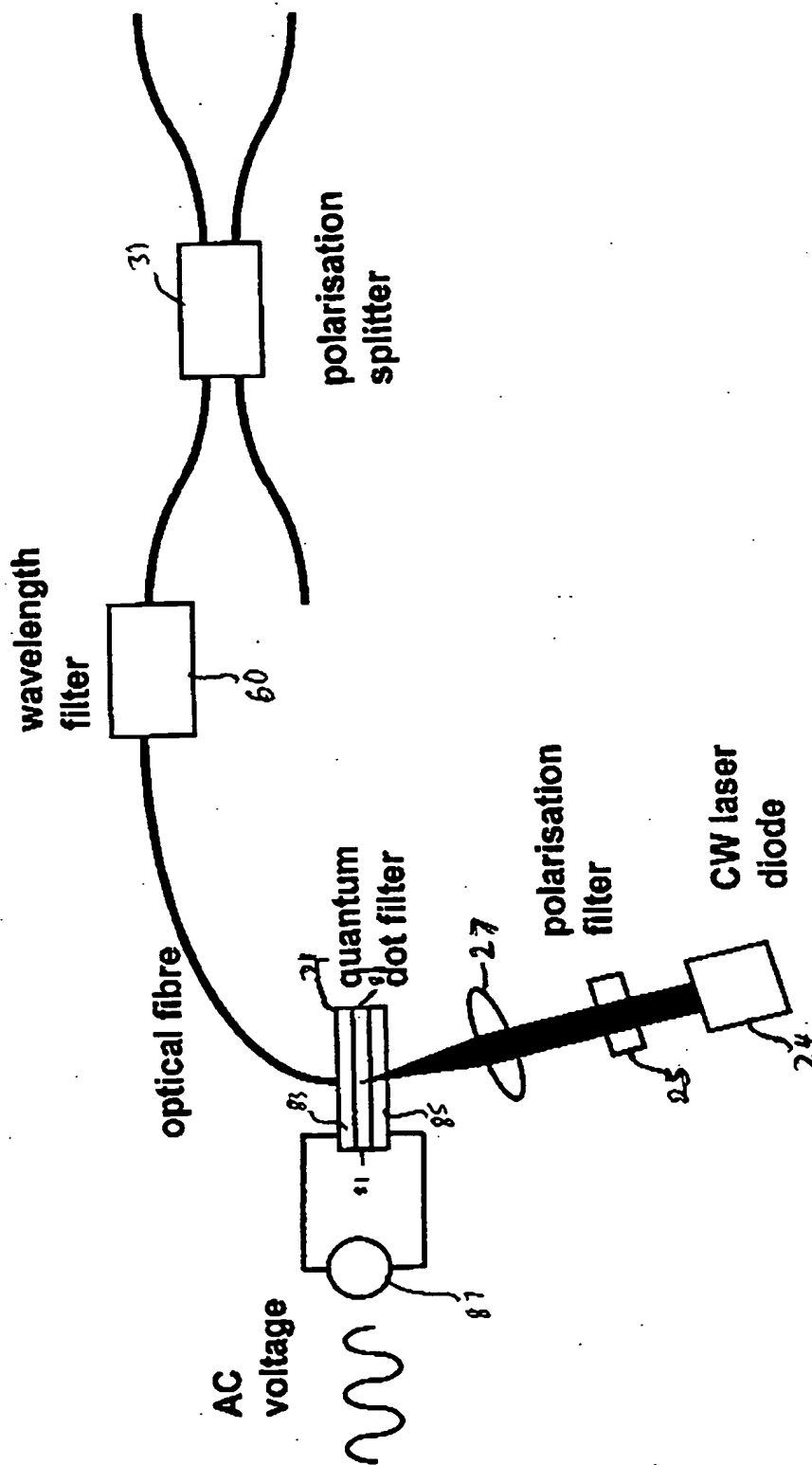
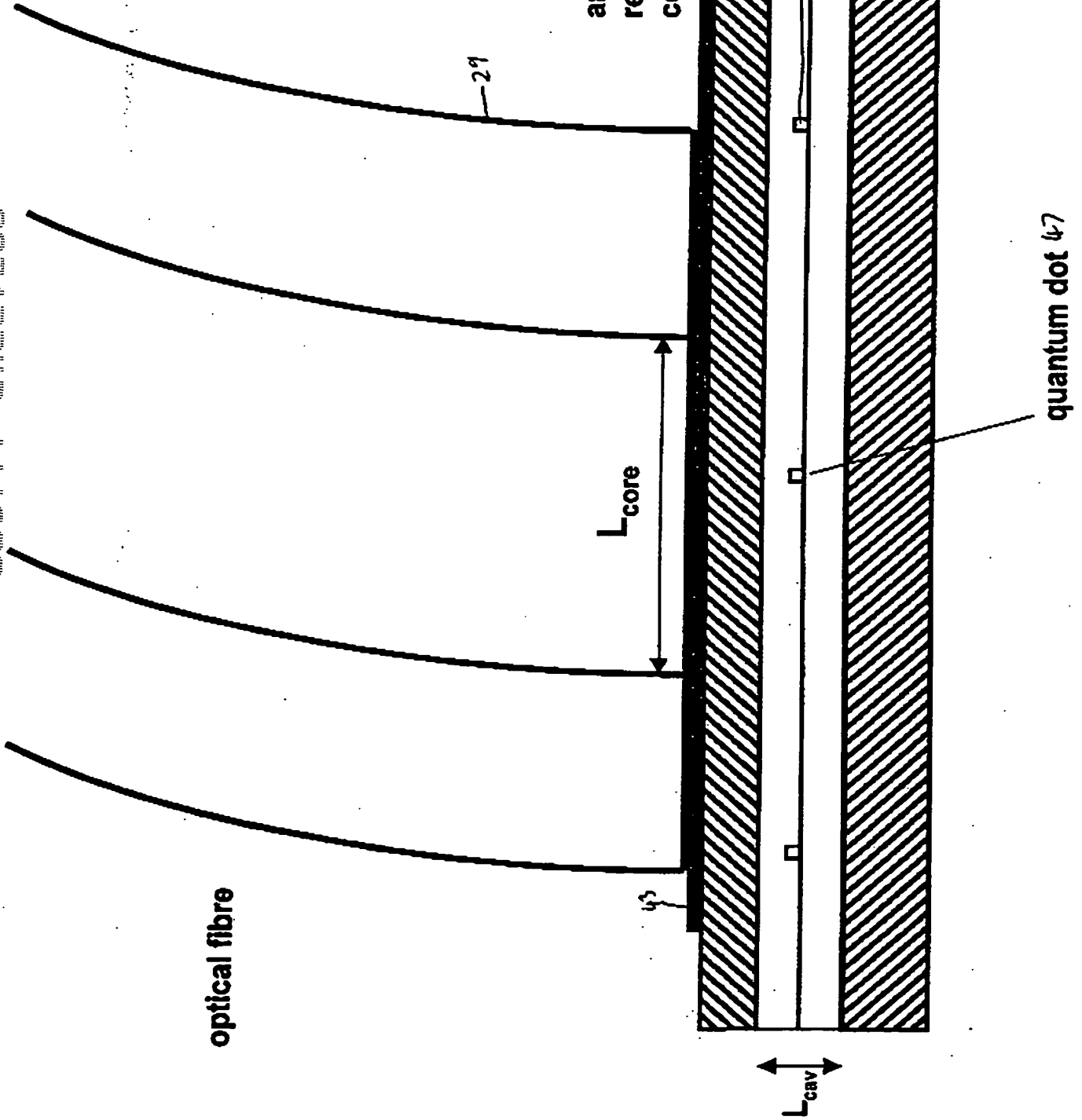


Fig.13

optical fibre



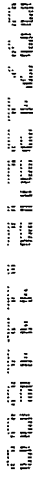


Fig. 15

16/29

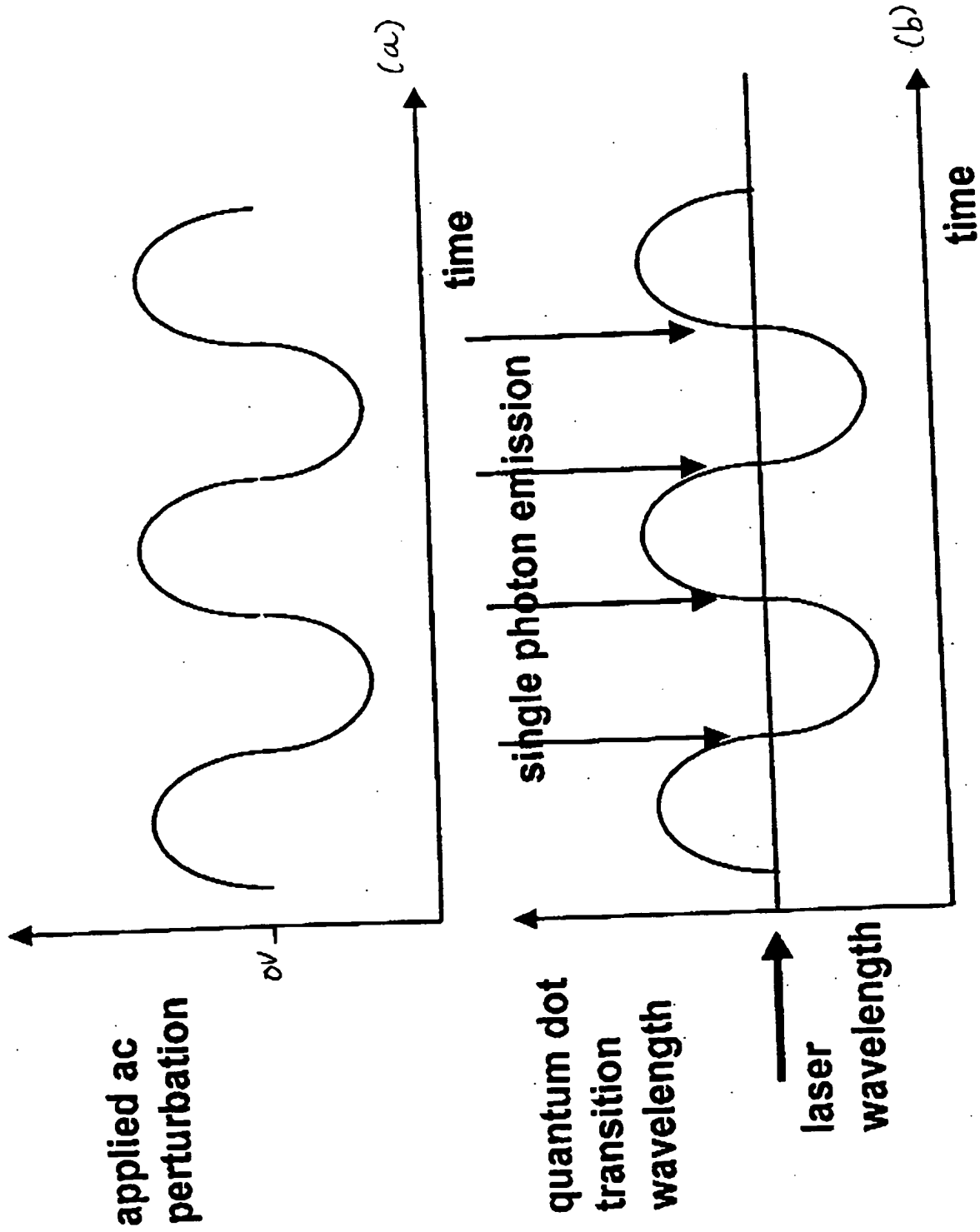


Fig.16

Electrically Injected QD Single Photon Emitter

OBLON, SPIVAK, ET AL
 DOCKET #: Andrew James SHIELDS, et al.
 INV. # 866US2CRL
 SHEET 17 OF 29

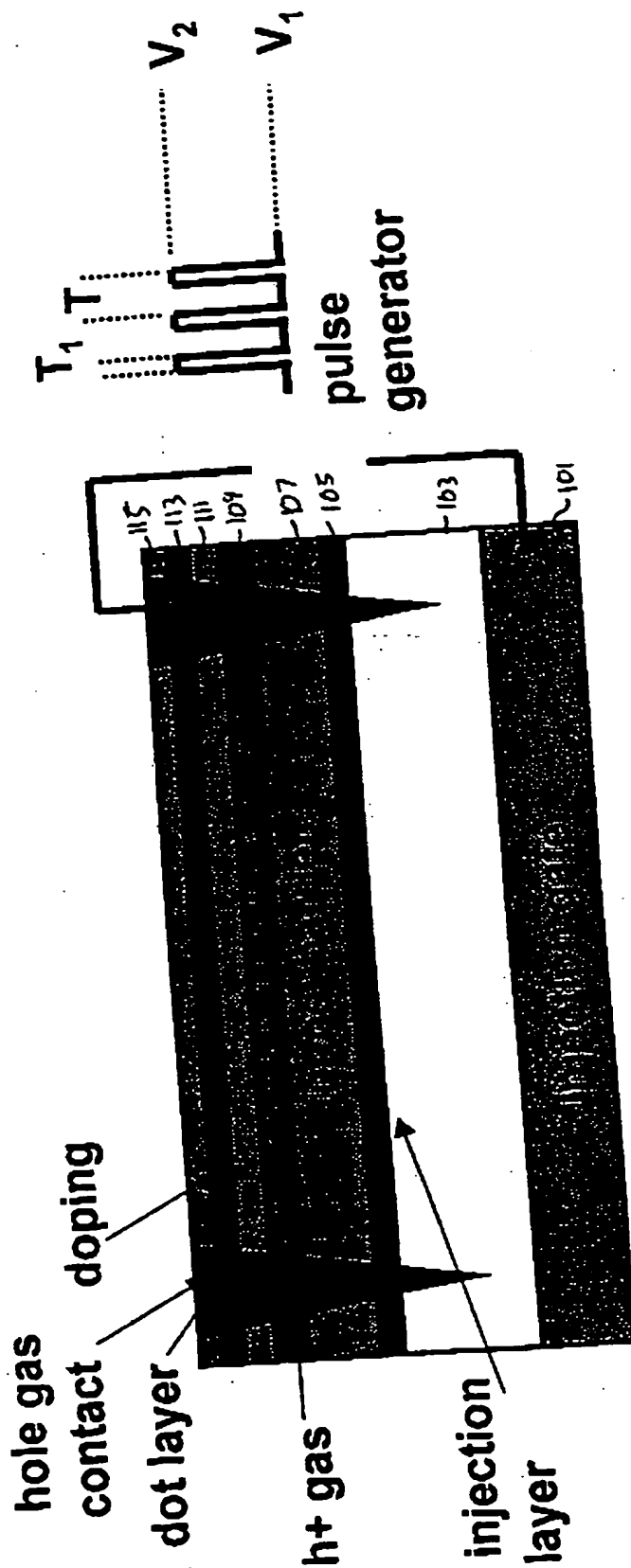


Fig.17

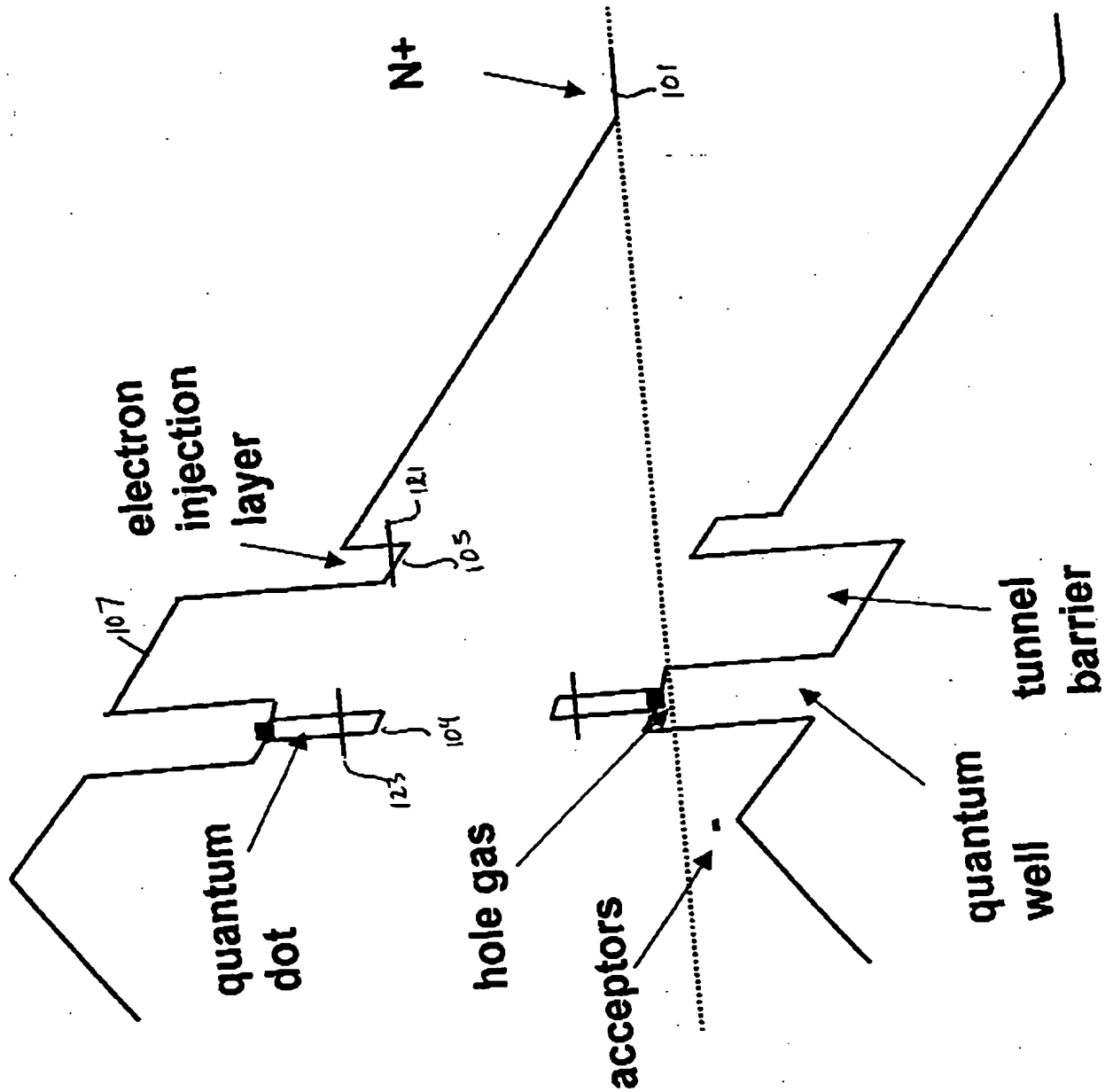


Fig.18

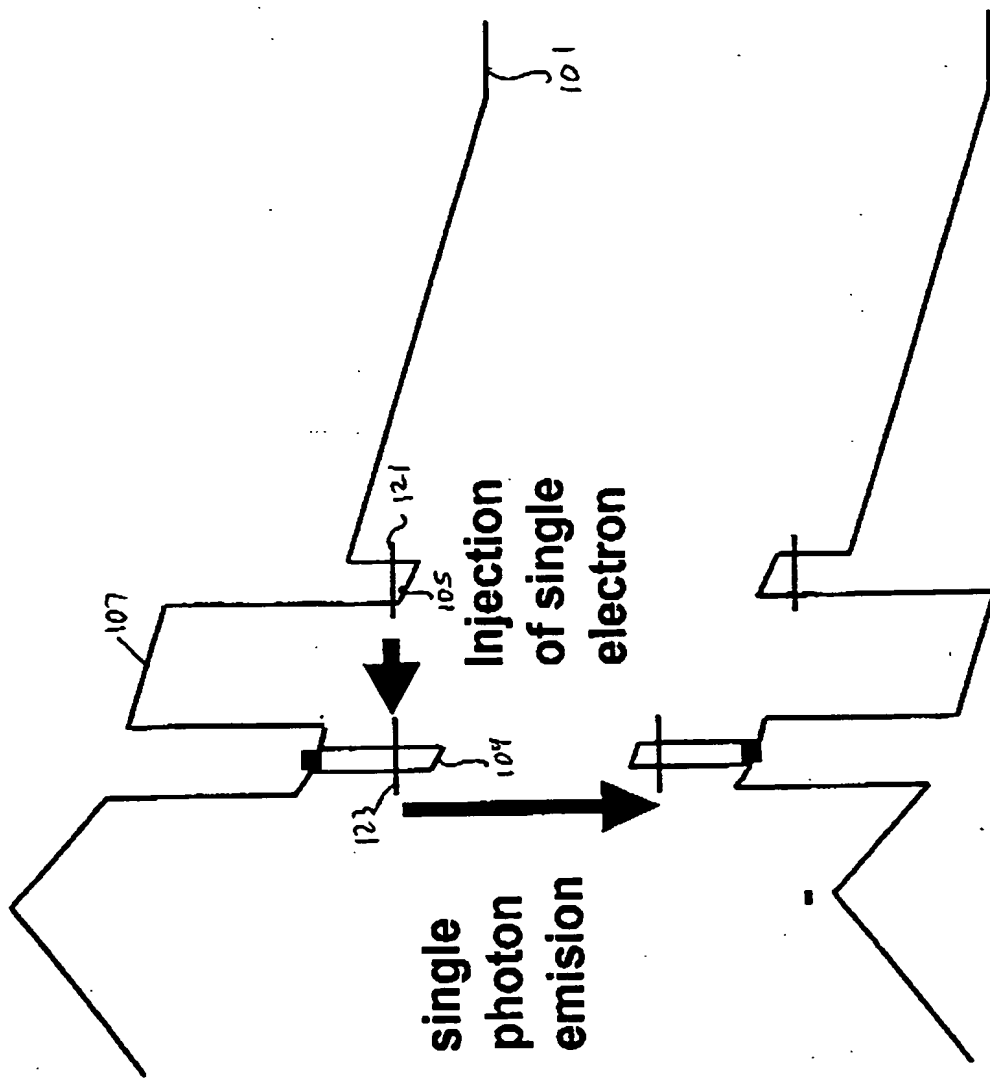
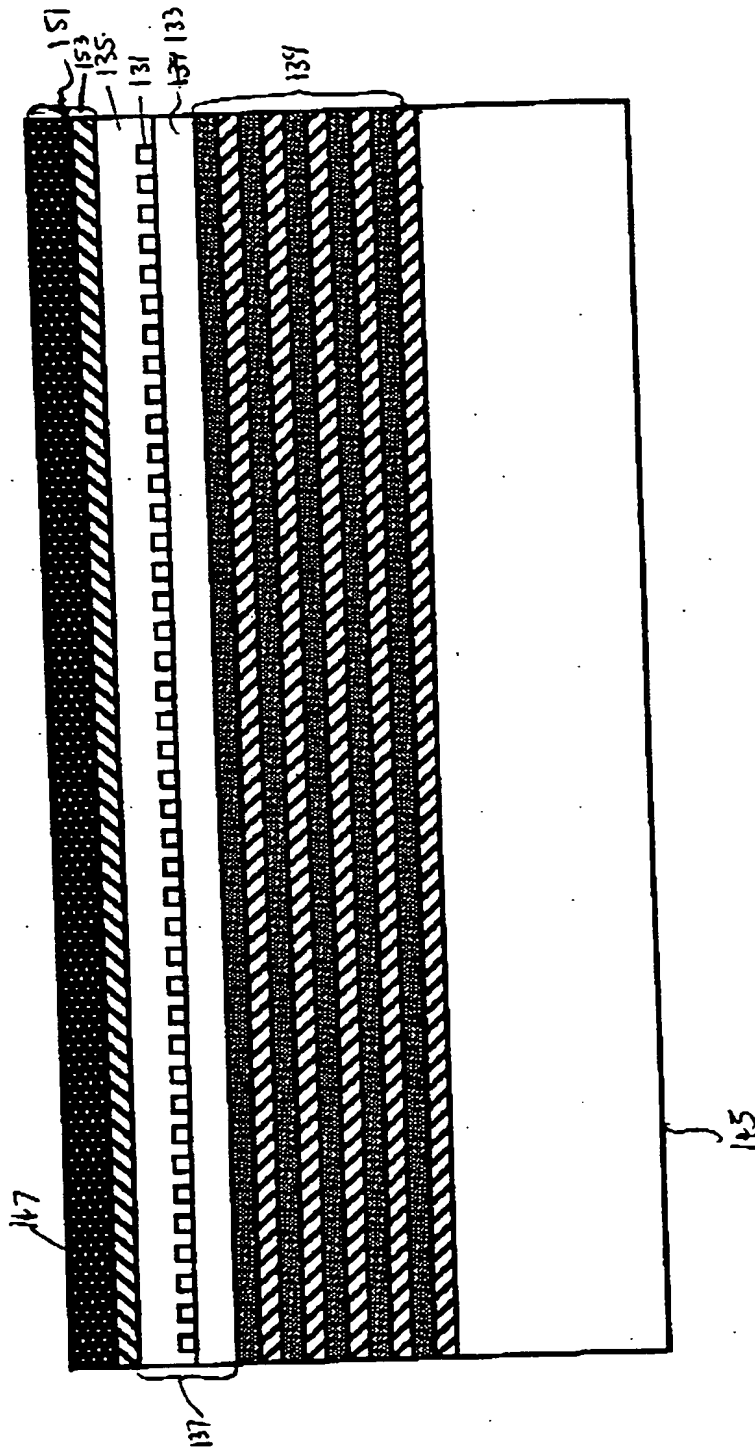
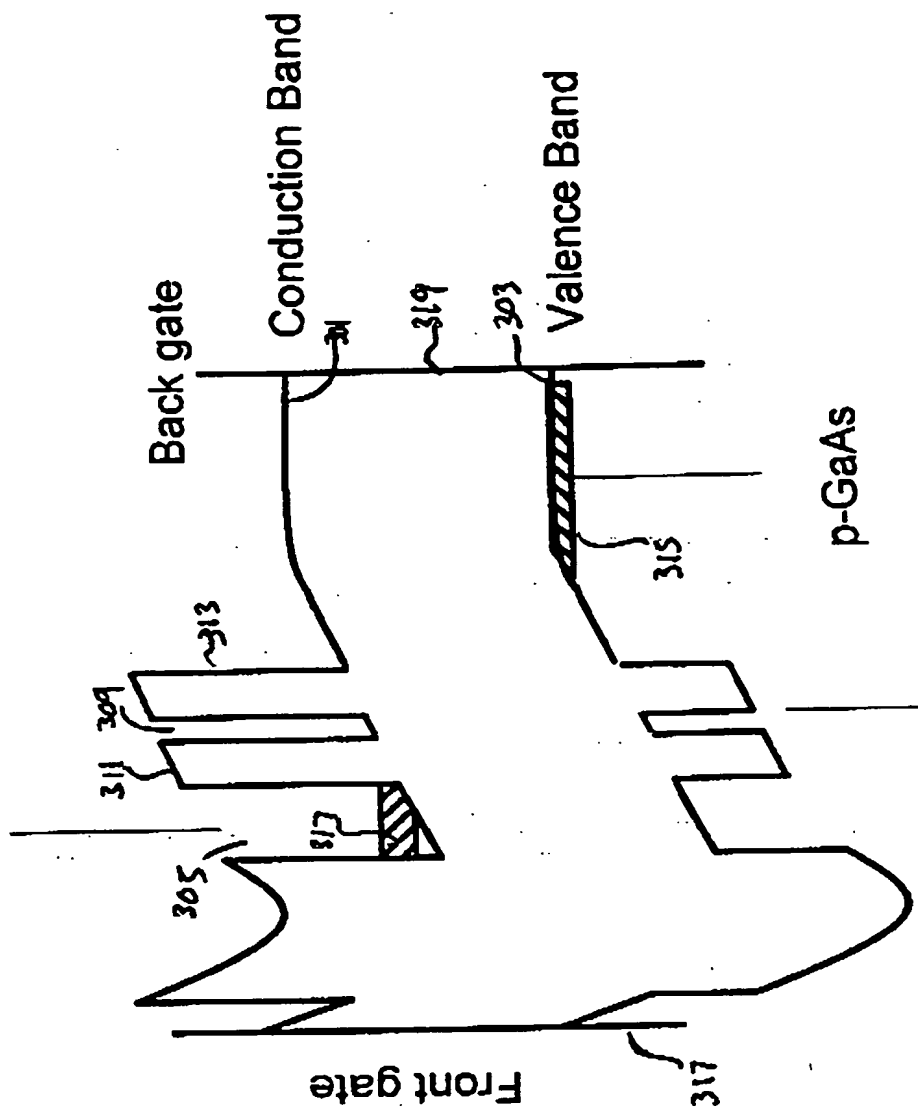




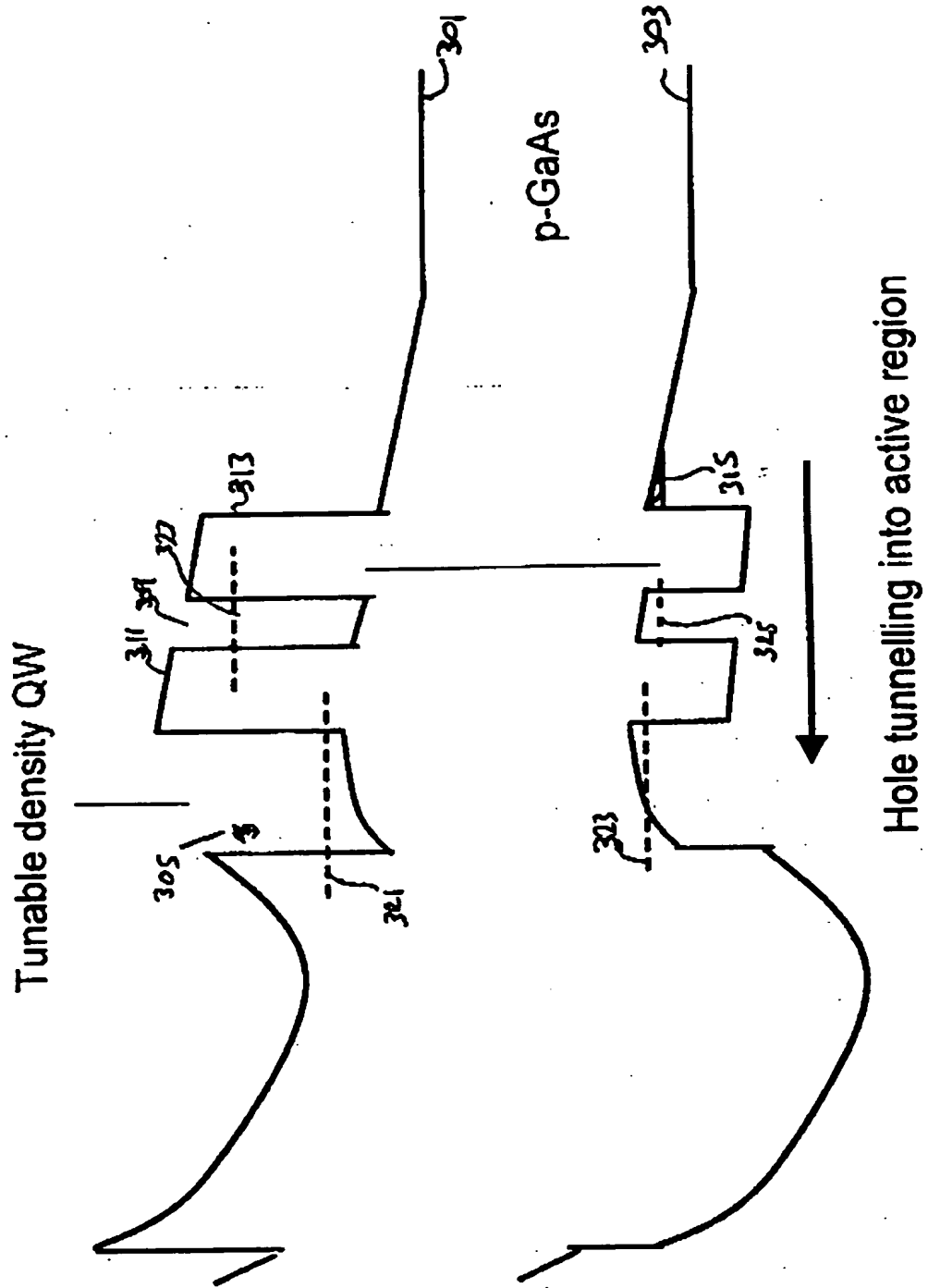
Figure 20



Active QW - remotely doped QW containing tunable excess electron density



Tunnelling QW - controls injection of holes into active region



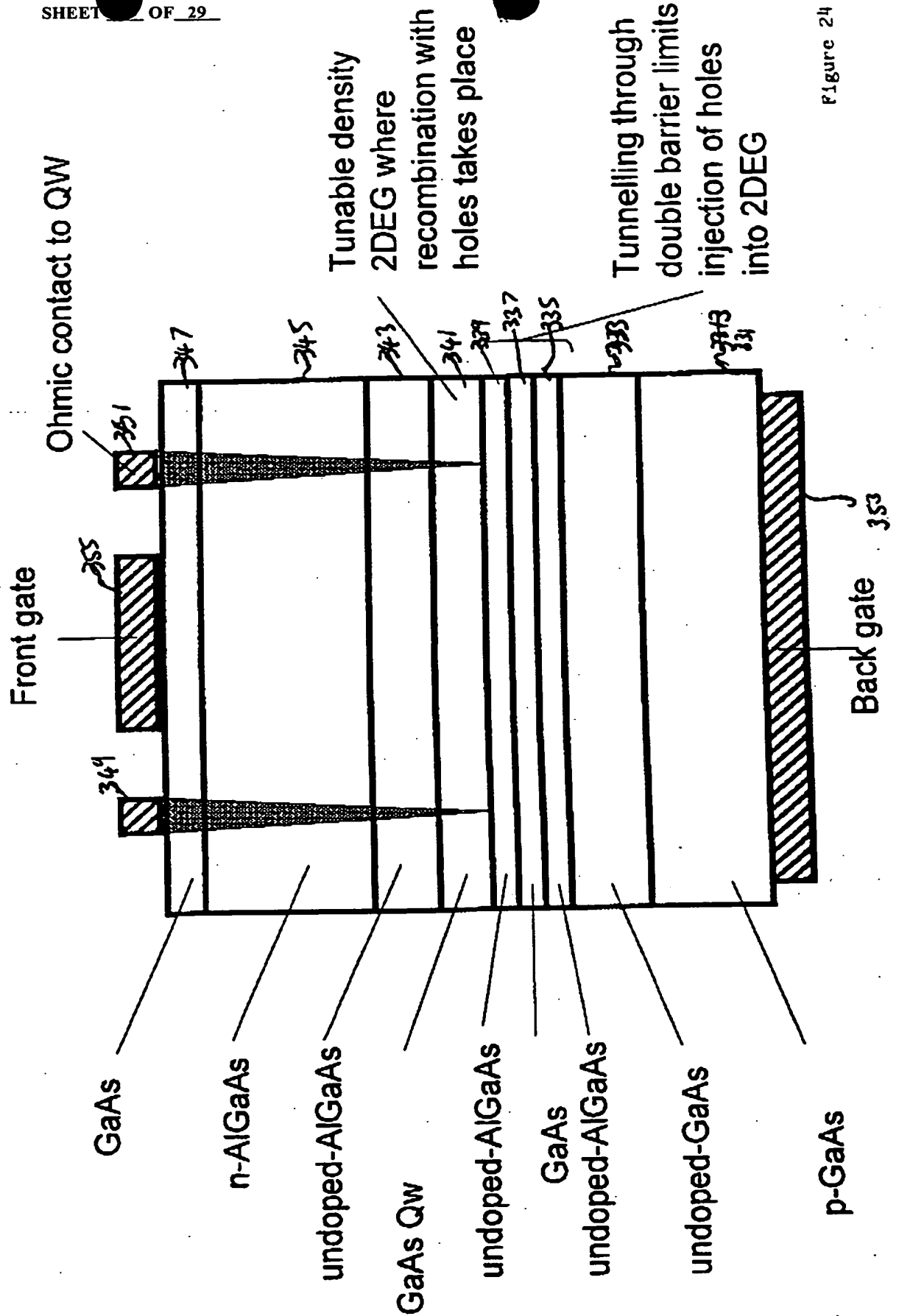


Figure 24

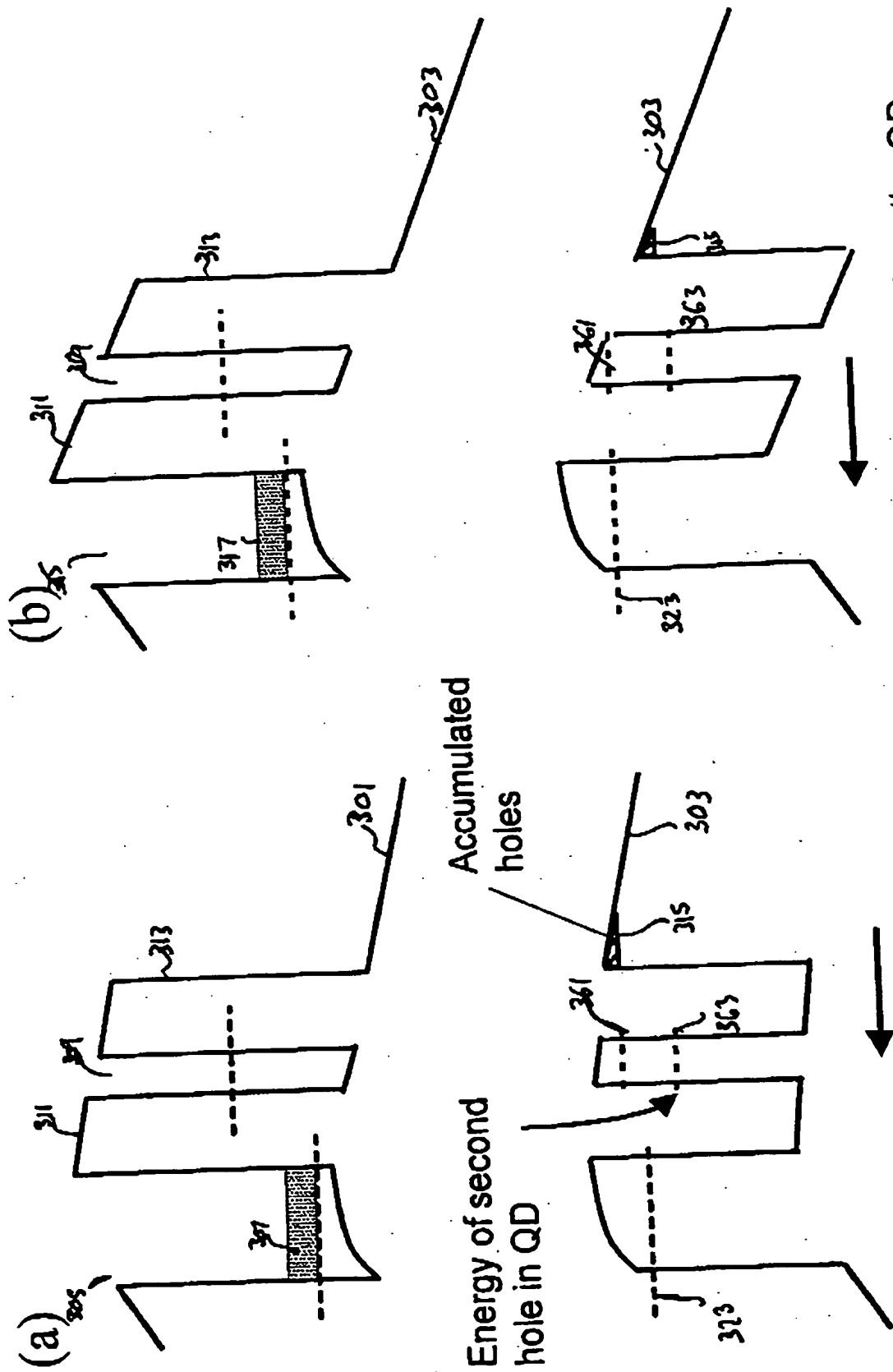
Front gate

Back gate

p-GaAs

Tunneling through

Tunneling through quantum dots states allows injection of holes one-by-one into active region



The Hole tunnels from the QD to the active region

27129

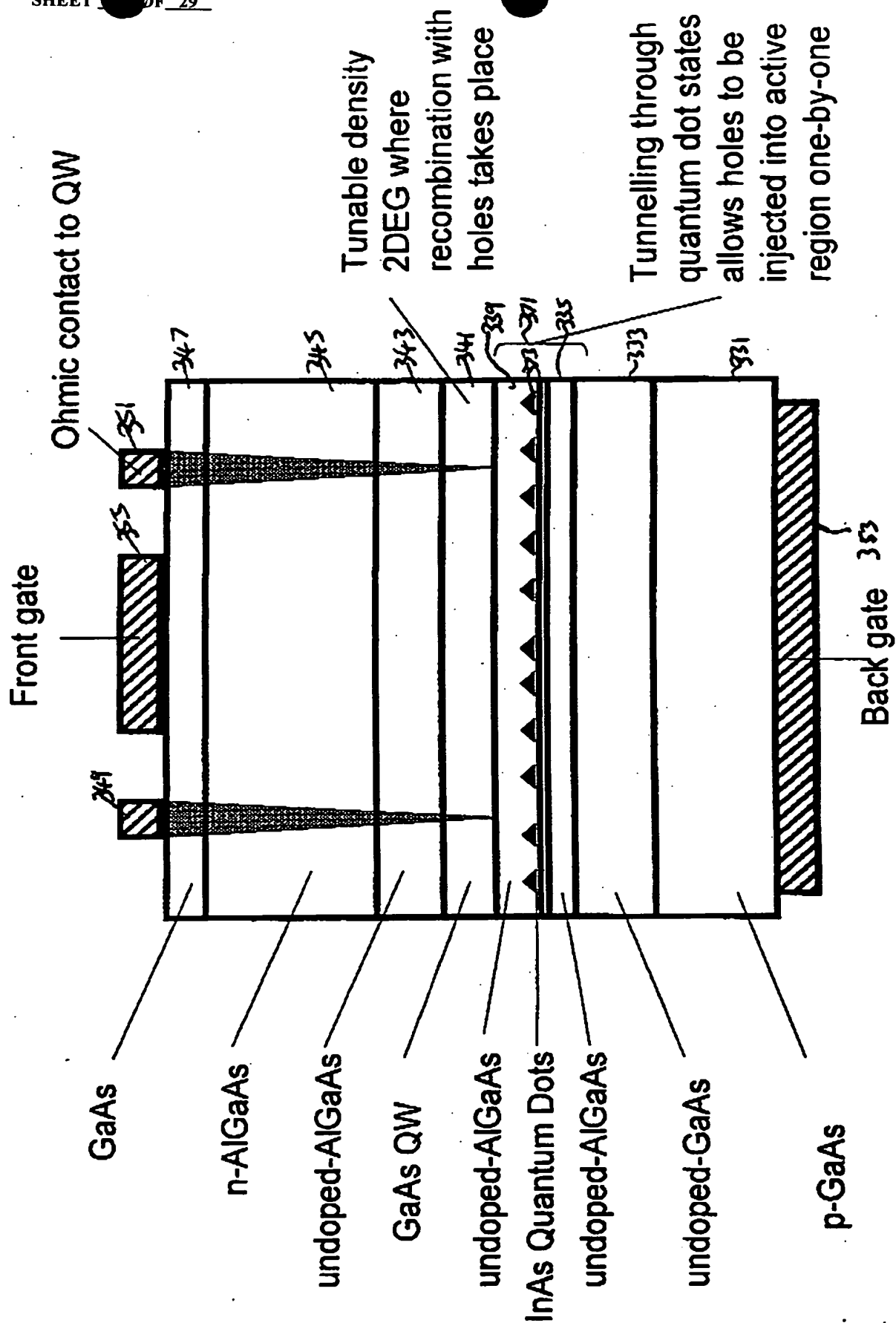


Figure 27.

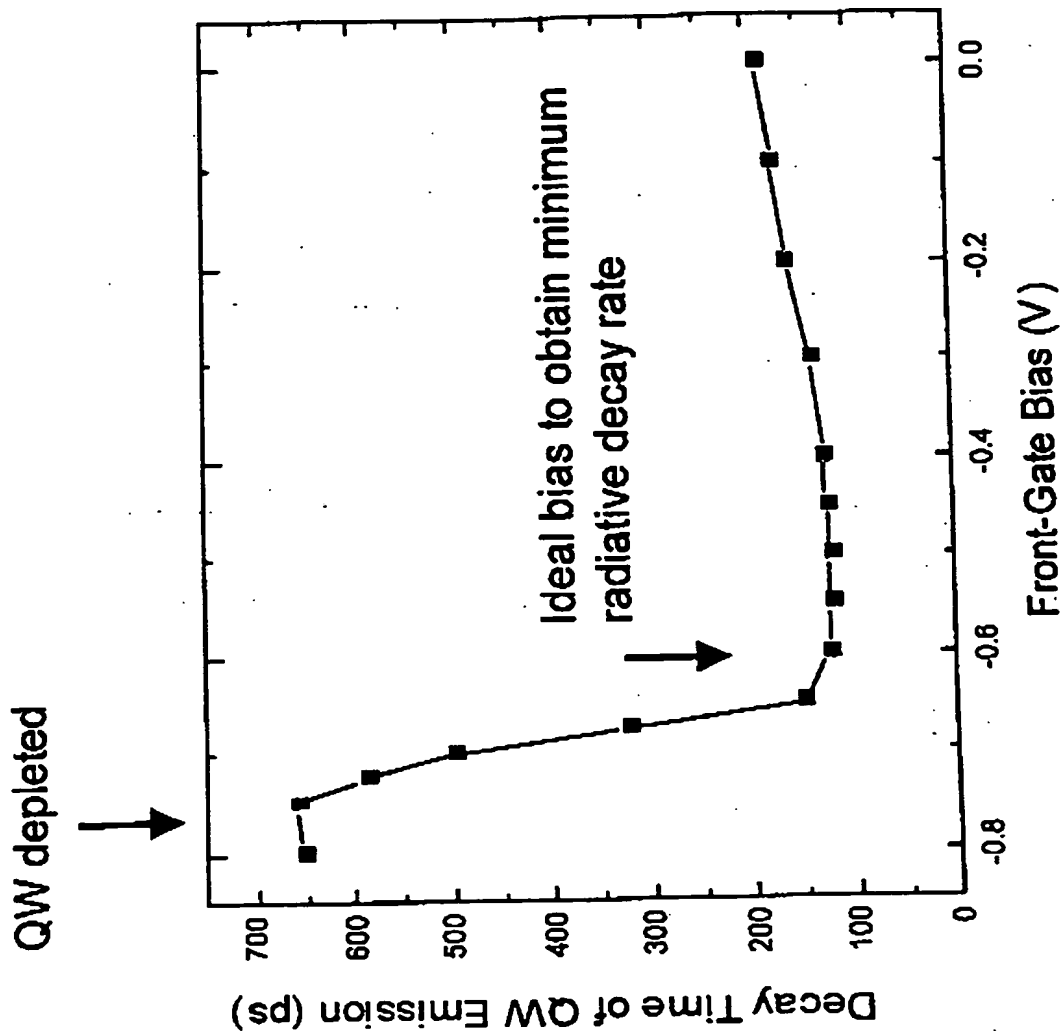


Figure 28

Increasing excess electron density

29/29

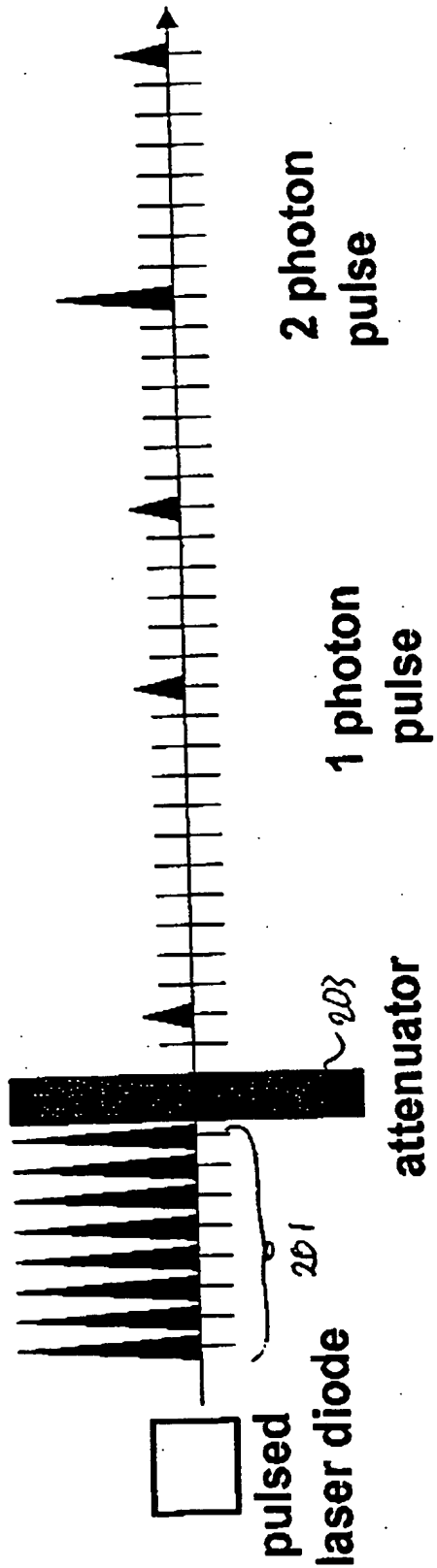


Figure 29